

Agricultural Pests: No Shortage in the Forecast

The cover story in this issue shows a few snapshots from the 33-year research album of Interregional Research Project No. 4, or IR-4. The name tells nothing about IR-4's unique role in protecting our food and fiber supply from a seemingly limitless supply of pests.

Through IR-4, ARS and other federal and state scientists conduct field trials and collect data to support registration or reregistration by the U.S. Environmental Protection Agency of certain pesticides and biopesticides.

Mostly, these are pest controls for use on a minor crop—that is, a crop grown on less than 300,000 acres nationwide. But IR-4 projects also address minor-use pest controls applied to multimillion-acre crops like wheat and corn.

Every day, you very likely eat or drink some of the rich array of foods available through IR-4's labors—even if you consider only the so-called minor crops. These crops occupy a fraction of the nation's 975 million farmland acres. But they include lettuce, carrots, fresh-market tomatoes, broccoli, cucumbers, melons, apples, pears, peppers, onions, and dozens of other food, fiber, and ornamental crops.

IR-4 scientists also seek EPA permission for wide-scale field trials of new anti-pest technologies. That's why, for example, ARS will soon conduct new tests of a natural weapon against aflatoxin, a grain contaminant that can threaten food and feed safety.

Without IR-4's "minor" activities, Americans might have to import more of the variety of foods needed for a diverse, healthful diet. And our

farm economy would be malnourished if it lost a significant part of the 42 percent of total sales that minor crops bring in.

"About the only minor things about minor crops are their relative acreage and their contribution to total pesticide use," sums up ARS nematologist Bill Johnson. He heads a field and lab program for IR-4 at Tifton, Georgia. Studies by Johnson and colleagues in Tifton's Nematodes, Weeds, and Crops Research Unit focus on the environmental fate of pesticides and other farm chemicals.

Farmers decide to grow any crop—minor or major—only if the risks are tolerable. Given the smorgasbord of pest problems, it seems a wonder anything arrives safely to our dinner plates. Worldwide, over 600 insects cause enough agricultural damage to make controlling them worthwhile. Additional threats include thousands of destructive weeds, nematodes, fungi, bacteria, and viruses.

Last summer's epidemic of Karnal bunt fungus in American wheat is the latest example of how fast and furiously pests can strike. Within weeks, efforts to contain the fungus caused world wheat stocks to dip to the lowest level in two decades.

Fully 30 percent or more of the world's potential crop production may be stolen in advance by pests, according to some estimates.

Meanwhile, population growth lays an ever-increasing burden on farmland resources. With world population now "only" 5.8 billion, hundreds of millions of people go hungry. Over the next 40 years, population may rise another 2.8 billion—the same increase that doubled our numbers over the past 40 years.

Pest control can scarcely become less important. But today's important public debates over how best to achieve it often ring chords of uncertainty about the future of pesticide

management research. To chart this future, ARS' National Program Staff (NPS) will sponsor a workshop for agency researchers in 1997.

NPS and more than 100 ARS researchers began planning the workshop last spring through an Internet discussion group set up by Tifton chemist Don Wauchope. The scientists soon received new food for thought. The National Research Council's Board on Agriculture announced plans for a 20-month study of the future of pesticides in U.S. agriculture.

At the workshop, ARS researchers will grapple with many of the issues to be addressed by the NRC study. For example, the study is expected to make recommendations on which chemical controls likely will continue to be needed, what opportunities exist for reducing health risks, and what federal role is appropriate to support development and use of chemical controls.

"Perhaps the NRC will find our workshop's report useful," Wauchope says. "ARS has a large research program on nonconventional pesticides and on reducing pesticide amounts and unwanted impacts. Our overall strategy is to minimize pesticide use and to define where such use is appropriate, while controlling pests effectively, safely, and economically.

"It's appropriate for us at ARS to examine all those aspects of pest control that are essential for the public good but will not be addressed by the private sector," says Wauchope. "We feel we can bring unique expertise and experience to this research."

This rule of thumb has guided ARS researchers in finding solutions to a host of problems for four decades. It's still the best guide for the future.

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